

5.9 BIOTIC COMMUNITIES

5.9.1 Background

This section describes the biological characteristics of the flora and fauna located within the study area and the impacts to these biotic communities from proposed improvements to the airport. Biotic communities may be affected directly or indirectly by airport development and aviation activities. Development may not only alter or eliminate existing vegetation, but may also affect wildlife using the vegetation as cover and forage. Related subjects are discussed in other sections as well: impacts to threatened and endangered species are described in Section 5.10 and impacts to wetlands and stream courses are described in Section 5.11.

5.9.2. Methodology

The inventory of biotic communities is based on field studies and a review of literature available on general ecosystems and distribution of flora and fauna in the study area. Several wetland delineations have been conducted at and around the airport for this and other projects. Field assessments were performed by The Louis Berger Group in August 2002 and November 2003 to identify significant or unique species and communities present within the study area.

Because the Proposed Action is to occur within the Indiana Lake Michigan Coastal Program (LMCP) area, the applicable summary matrix of laws and guidance documents for this environmental category has been reviewed to confirm that all state and local regulations have been considered in this EIS. The matrix on Natural Areas, Fisheries, Wildlife, and Native and Exotic Species issues can be found in **Appendix C** for reference. Matrix 5-5 Cross-reference of Natural Areas, Fisheries, Wildlife, and Native and Exotic Species Laws and Guidance Documents has been reviewed by the consulting team to confirm that all the identified items have been considered in the evaluation of the biotic communities impacts as described in this section.

5.9.3 Existing Conditions – 2000

5.9.3.1 Vegetation and Habitat Types

5.9.3.1.1 Vegetative Communities

Nine general vegetative cover types were identified within the study area, and are similar to those described by White (1978). Five of these cover types are specifically associated with wetland habitats. Several cover types are associated with high-use residential, commercial urban and suburban areas.

Inland Dune and Swale: This complex consists of long, narrow, alternating strips of dunes (sand ridges about 6 feet tall) and swales (muck-filled sloughs), which are 60 to 100 feet wide and aligned in the same direction as the Lake Michigan shoreline. The dry, sandy dunes are characterized by the same vegetative associations as those found in the sand savanna and sand prairie communities described below. Swales are characterized by similar vegetation to that found in marsh and shrub swamp communities, also described below. The inland dune and swale ecosystem is unique to the southern tip of Lake Michigan and is now extremely limited in area due to industrial and residential development.

The inland dune and swale vegetative communities are quite diverse and distinct from one another. In some instances, early successional floodplain forest tree species are found growing along swale margins. Dunes further inland contain Black Oak forest or savanna with characteristic herbaceous associates, while the sand savannas on the dunes closer to Lake Michigan include earlier successional species such as Jack Pine and Paper Birch. Some dunes near the lakeshore lack trees and are dominated by sand prairie species. Most remaining dune and swale areas have been subjected to widely varying levels of disturbance. In the study area, dune and swale occurs at Brunswick Center Savanna, Ivanhoe Dune and Swale (east and west), Clark Junction South, and Clark and Pine Dune and Swale. Remnant dune and swale habitat (moderately to extensively disturbed) occurs at the airport between the Grand Calumet River and the runways, in the Asphalt Wetlands, and at Clark Junction Addition 1.

Sand Savanna: This savanna community occurs on sandy soils and is typically dominated by Black Oak. Herbaceous plant species include Lead Plant, Little Bluestem Grass, Thimbleweed, Spreading Dogbane, Beach Wormwood, Butterfly Weed, Sky-Blue Aster, Flax-Leaved Aster, Tall Coreopsis, Flowering Spurge, Woodland Sunflower, June Grass, Hairy Puccoon, Wild Lupine, Prickly Pear Cactus, Panic Grass, Bracken Fern, White Oak, Porcupine Grass, Goat's Rue, Spiderwort, and Bird's Foot Violet. This vegetative community occurs on well-drained dunes of the dune and swale habitat. The study area contains a number of preserved areas of dune and swale and remnant dune and swale habitat with this vegetative cover.

Sand Prairie: This native grassland community is located on sandy soil. Typical species include Big Bluestem Grass, Little Bluestem Grass, Prairie Coreopsis, Flowering Spurge, June Grass, Round-Headed Bush Clover, Rough Blazing Star, Porcupine Grass, Spiderwort, and Culver's Root. In the study area, this vegetative cover type occurs at the Buffington Sand Prairie and South Shore Right-of-Way, both of which are former dune and swale habitats that have been graded to support industry.

Marsh: This emergent wetland community is usually dominated by Common Cattail or Common Reed (also known as *Phragmites*). Many marshes in the vicinity of the study area have been invaded by Purple Loosestrife. Associate marsh species include Common Water Plantain, Swamp Milkweed, Blue Joint Grass, Marsh Shield Fern, Common Boneset, Blue Flag Iris, Chairmaker's Rush, Great Bulrush, Water Parsnip, and Prairie Cord Grass. Marshes occur in a number of locations in the study area, most notably in remnant dune and swale habitat. For a map of marshes and other wetland habitats, see the Wetlands and Streams chapter.

Panne: This is an unusual type of wetland community found in wet swales along the dunes close to Lake Michigan. While many plant species found in pannes are also characteristic of calcareous fens, the substrate saturation is more characteristic of marsh communities. Some notable species found in pannes include Golden Sedge, Elk Sedge, Twig Rush, Fringed Gentian, Rose Gentian, Shrubby Cinquefoil, and Common Bog Arrow.

Shrub Swamp: This permanent or semi-permanent wetland contains at least 50% shrub cover. Typical shrub species include Buttonbush, Red-Osier Dogwood, Silky Dogwood, and Sandbar Willow. Herbaceous associates include many marsh and panne species. This community occurs sporadically throughout the study area. Section 5.11, Wetlands and Streams, portrays locations of this community type.

Floodplain Forest: This forest community is located within stream floodplains and is subject to periodic flooding. The floodplain forests found within the study area are generally in an early successional stage. Typical tree species include Box Elder, Silver Maple, White Ash, Red Ash, Green Ash, Cottonwood, and Black Willow. Common herbaceous associates include Giant Ragweed, Common Wood Reed, Honewort, Annual Bedstraw, Clustered Black Snakeroot, and Feathery False Solomon's Seal. In the study area, floodplain forests occur along portions of the Grand Calumet River.

Urban Vegetated: This vegetative community is the urban equivalent of an old field. It includes areas with enough vegetation, usually non-native, to provide limited cover for wildlife species. Aggressive and weedy plant species predominate, such as Yarrow, Quack Grass, Common Ragweed, Field Bindweed, Wild Carrot, White Sweet Clover, Yellow Sweet Clover, Canada Blue Grass, Kentucky Blue Grass, Bouncing Bet, and Common Mullein. Later successional areas often contain Box Elder, Glossy Buckthorn, Cottonwood, and Staghorn Sumac. In the study area, railroad right-of-ways and roadsides are examples of this vegetative cover type.

Urban Unvegetated: Areas with no vegetation or vegetation too low or sparse to serve as cover to wildlife (mowed grass, etc.) are classified in this category. Much of the developed portion of the airport consists of this vegetative cover type. Areas of industry or dense residential development are also included in this category.

5.9.3.1.2 Vegetation in the Project Area

The airport is located within a predominantly urban and industrial landscape with patches of natural vegetated habitats. Vegetated areas within the airport property consist predominately of mowed lawns, shrub-swamp, and urban vegetated habitats. Typical plant species within the airport include Scrub Oaks, Dogwoods, Speckled Alder, Prickly-Pear Cactus, Common Reed, Wild Asparagus, and grasses (AMEC, 2003). As part of the Wildlife Hazard Management Plan, the airport maintains low ground cover and sparse vegetative areas to discourage wildlife habitation. This landscape management is practiced in order to reduce the risk of damage to aircraft and disruption to service due to wildlife-aircraft collisions.

The area between Runway 12-30, Runway 2-20, and the Grand Calumet River (also known as the mid-field triangle) consists of over 100 acres of remnant dune and swale habitat (**labeled as Gary/Chicago International Airport in Exhibit 4-16**). The Nature Conservancy (1999) described this site as having lost its natural communities due to extensive physical disturbance. This area has revegetated with predominately native vegetation, but does contain some coverage by exotic vegetation. A 12.8-acre site within this area, at the southern portion of the property adjacent to the control tower, is a dune and swale mitigation project that has not been completely successful. Although the dune and swale formations remaining at the airport have been disturbed, the USFWS notes that there are still some conditions present that are dry enough to support young Black Oak and areas of wetlands that support species such as Blue-joint Grass, Kalm's Lobelia, *Spirea* species, and sedges (Pruitt, 2003a). Other plant species noted by the USFWS to be present at the airport include White Birch, Eastern Cottonwood, Shrub Willow, Red-Osier Dogwood, Gray Dogwood, and Glossy Buckthorn.

The Asphalt Wetlands is a large area located between Runway 12-30 and Cline Ave (**see Exhibit 4-16**), and fringed with current and former light industrial sites. Some remnant dune and swale habitat exists in this area; however, much of the Asphalt Wetlands has been extensively degraded by sand mining, the disposal of construction debris and oil refinery waste, and a chemical recycling operation. A gravel handling operation is currently conducted at the northernmost part of the area. The Nature Conservancy (1999) categorized the Asphalt Wetlands as a 146-acre site composed of vacant urban land with much of the natural topography having been destroyed, in part with the use of

non-native fill material. Typical vegetation cover was described as a combination of exotic and weedy native species with limited habitat value.

The wetland delineation performed in 2002 describes most of the northern two-thirds of the Asphalt Wetlands as remnant dune and swale habitat which has been altered through the mining of sand and the disposal of oil refinery waste (see Wetlands and Streams section). This portion contains over 47 acres of wetlands falling into two categories: remnants of natural swales or mined dunes and extensively disturbed depressions vegetated with cattail or common reed. The remnants of natural swales and areas where dunes were mined on the site are either dominated by monocultures of Cattail, Hardstem Bulrush, and Common reed or by native wet prairie vegetation. This native vegetation includes species such as Chairmaker's Rush, Prairie Cordgrass, Switchgrass, Torrey's Rush, Grass-Leaved Goldenrod, and Spikerush. Wetlands containing mostly native vegetation were also characterized by a sandy soil substrate. The wetlands dominated by Cattail, Hardstem Bulrush, and Common Reed were characterized by a heavy tar substrate or sandy soil containing significant amounts of petroleum.

The southern third of the Asphalt Wetland contains a former oil refinery area and disturbed woodland and prairie area. The oil refinery area (the western two-thirds of the southern section of the Asphalt wetlands) is mostly unvegetated, due to heavy tar on the soil surface and petroleum saturated soil. Vegetation ranges from nonexistent to dense, and consists of Switchgrass, Spikerush, and Chairmaker's Rush. Evidence of wetland hydrology appears as watermarks on the vegetation and driftlines. The soil substrate is severely disturbed and consists mainly of a heavy tar, beneath which sandy soil is present. The surrounding upland consists of significantly disturbed ground, with piles of concrete, metal debris and tires. Dominant vegetation includes Switchgrass, Big Bluestem Grass, Indian Grass, Tall Goldenrod, and Cottonwood. A strong chemical odor was noted in soil test pits throughout the oil refinery area. In the disturbed woodland and prairie area (eastern third of the southern section of the Asphalt Wetlands), the woodland area is vegetated with Cottonwood, Black Cherry and Glossy Buckthorn. The prairie area is vegetated mainly with Big Bluestem Grass, Blazing Star, and Tall Goldenrod. Several small wetlands also exist in the disturbed woodland and prairie area.

North of the Cline Avenue/Toll Road access ramp and between the EJ&E mainline and a spur line is a triangular parcel of over 9 acres of land. *The NWI map portrays this area as a deciduous forest (labeled as Wetland B in Exhibit 5-28).* A scientist from the Louis Berger Group, Inc. conducted a field investigation in October 2003, finding it to contain extensive cover of Common Reed and some woody vegetation typical of early successional forest stages.

Clark Junction South is a 25-acre, privately owned site with extensive exotic species. The Nature Conservancy (1999) has identified small sections of swale that appear to be intact. The site is essentially bordered by railroad tracks (**refer to Exhibit 4-16**).

5.9.3.2 Existing Wildlife and Wildlife Habitat

The unique plant communities of dune and swale habitats in the Southern Lake Michigan area support a large number of wildlife species, including mammals, birds, reptiles, amphibians, and fish. The wide range of landforms and vegetation provides a variety of habitats for this wildlife assemblage. Wildlife diversity is closely related to the structure and plant species composition within vegetative communities. The remaining dune and swale topography and associated wetlands and vegetation in the preserved natural areas around the airport support the greatest number of wildlife species, particularly of birds, reptiles and amphibians. Severely disturbed or degraded habitats, highly urbanized areas, and areas surrounding the airport runways support relatively low wildlife species diversity.

As previously mentioned, the Gary/Chicago International Airport is located within a primarily urban and industrial landscape with patches of natural vegetative habitats. A Wildlife Hazard Management Plan is required under the FAA's Part 139 Certification in order for the Gary Chicago International Airport to maintain passenger service. The purpose of the Wildlife Hazard Management Plan is to reduce the airport's attractiveness as a source of food and cover to wildlife. In addition to maintaining low, sparse vegetative cover, the airport also maintains a fenced perimeter to keep wildlife off runways and taxiways. The Wildlife Hazard Management Plan also outlines wildlife control practices such as the use of auditory frightening devices and techniques to scare wildlife from the premises, and population reduction methods such as hunting and trapping (GCRA, 2002).

Birds

Airport personnel have stated typical bird species observed within the Gary/Chicago International Airport include Canada geese, ducks, egrets, blue herons, hawks, seagulls, and a variety of other migratory bird species (AMEC, 2003). A scientist from the Louis Berger Group, Inc. conducted a field investigation in the Asphalt Wetlands in October 2003 and observed the following bird species: Red-Tailed Hawk, Northern Mockingbird, European Starling, Sparrow, Mourning Dove, and Crow. Bird species known to nest at the airport include Goldfinches, Red-Winged Blackbirds, Robins, and Song Sparrows. TAMS (1991) reported that over 12,000 birds representing 176 different species were observed in and around the study area. Open country passerine species were the most abundant species observed. Waterbirds such as American Coots, Blue-Winged Teals, Mallards, Wood Ducks, American Bitterns, Least Bitterns, Great Blue Herons, Green Herons, Black-Crowned Night Herons, and Sandhill Cranes were observed in and around the marshes. Buffleheads, Common Goldeneyes, Lesser Scaups, Red-Breasted Mergansers were

observed in and above the marshes. In ponded areas observations were made of Buffleheads, Common Goldeneyes, Lesser Scaup, Red-Breasted Mergansers, Ruddy Ducks, Ring-Necked Ducks, Pied-Billed Grebes, Mallards, Double-Breasted Cormorants, and Canada Geese. Upland species included Ring-Necked Pheasants. American Kestrels, Red-Tailed Hawks, Sharp-Shinned Hawks, Belted Kingfishers, Chimney Swifts, and Common Nighthawks were observed hunting around ponds and lakes. In forested dune habitats, Mourning Doves, Common Nighthawks, Northern Flickers, Common Grackles, Rufous-Sided Towhees, and Downy Woodpeckers were observed. Open habitat birds included Common Yellowthroats, Song Sparrows, American Goldfinches, Eastern Kingbirds, Field Sparrows, and Red-Winged Blackbirds.

Mammals

Airport personnel have observed White-Tailed Deer, Beaver, Muskrats, Opossum, Rabbits, Moles, and Mice at the Gary/Chicago International Airport (AMEC, 2003). A scientist from the Louis Berger Group, Inc. conducted a field investigation in the Asphalt Wetlands in October 2003, and observed Chipmunks and tracks of White-tailed Deer and Coyotes. TAMS (1991) reported a variety of mammals in and around the study area. Sand savannas were found to host several common mammal species including Gray Squirrels and White-Footed Mice. In sand prairie habitats, the Deer Mouse was observed more commonly than the White-footed Mouse, and Meadow Voles were common along the margins of marshes and shrub swamps. Other mammals observed in and around the study area included The Short-Tailed Shrew, Eastern Mole, Silver-Haired Bat, Eastern Cottontail, Franklin's Ground Squirrel, Muskrat, Norway Rat, Red Fox, Raccoon, and White-Tailed Deer.

Amphibians and Reptiles

Amphibian and reptile species that the USFWS has observed within wetland areas at the Gary/Chicago International Airport and adjacent properties include Spring Peepers and Western Chorus Frogs (Pruitt, 2003a). TAMS (1991) reported 20 species of herpetofauna in or adjacent to the study area. The greatest diversity was noted in the wetter sites close to Lake Michigan. Sand area species include the Six-Lined Racerunner and the Western Slender Glass Lizard. Species observed from the dune and swale habitats included Green Frogs, Garter Snakes and Brown Snakes. Airport personnel report turtles at the Gary/Chicago International Airport (AMEC, 2003).

Fish and Aquatic Invertebrate Communities

Neither the study area nor nearby Lake Michigan provide essential fish habitat for any species managed under a Federal fishery management plan. Therefore, there is no essential fish habitat

designated within the study area pursuant to the Magnuson-Stevens Fishery Conservation and Management Act ¹.

The USFWS evaluated the biological condition of a 5-mile segment of the East Branch of the Grand Calumet River (EBGCR) from Tennessee Street (near the Gary Harbor) west to the Norfolk Southern Gary Branch rail bridge to document the condition of the aquatic ecosystem prior to remediating the river sediments². The fish and invertebrate communities were sampled at five sites immediately east of the study area, in June and July of 1994.

Fish

USFWS fish survey results were analyzed using the Index of Biotic Integrity (IBI)³. The IBI uses 12 metrics to evaluate the species composition, trophic composition, and relative abundance and condition of the fish community at a site. The resulting IBI scores showed the fish communities of all five sites to be in the very poor integrity classification: few fish present, mostly introduced or tolerant forms; hybrids common; diseases, parasites, fin damage, and other anomalies regular. The fish survey revealed the EBGCR to have low numbers of individuals and low species diversity, as well as dominance by tolerant and exotic species. Additionally, the survey found very few carnivorous species and no sensitive species, reflecting the poor substrate conditions, inadequate invertebrate food base and generally degraded environmental conditions of the EBGCR (see **Exhibit 5.9-1**).

¹ National Marine Fisheries Service, Office of Habitat Conservation, 2001. Essential Fish Habitat. Internet Web Site <<http://www.nmfs.noaa.gov/habitat/efh/>>

² U.S. Fish and Wildlife Service (USFWS) 1994. Biological Report. *Pre-Remedial Biological and Water Quality Assessment of the east Branch of the Grand Calumet River*, Gary, Indiana, June 1994.

³ Karr et al. 1986. Karr, J.R., K.D. Fausch, P.L. Angemeier, P.R. Yant, and I.J. Schlosser, 1986. *Assessing Biological Integrity in Running Water: a Method and its Rationale*. Illinois Natural Historic Survey Special Publication 5. 28 pp.

EXHIBIT 5.9-1 Gary/Chicago International Airport Fish Species Found in the East Branch of the Grand Calumet River Within the Vicinity of the Study Area		
Common Name	Scientific Name	Origin
Bluntnose minnow	<i>Pimephales notatus</i>	Indigenous
Carp	<i>Cyprinus carpio</i>	Introduced
Carp * Goldfish	Hybrid	Introduced
Central mudminnow	<i>Umbra limi</i>	Indigenous
Chinook salmon	<i>Oncorhynchus tshawytscha</i>	Introduced
Gizzard shad	<i>Dorosoma cepedianum</i>	Indigenous
Goldfish	<i>Carassius auratus</i>	Introduced
Golden shiner	<i>Notemigonus crysoleucas</i>	Introduced
Golden shiner * Rudd	Hybrid	Introduced
Largemouth bass	<i>Micropterus salmoides</i>	Indigenous
Pumpkinseed	<i>Lepomis gibbosus</i>	Indigenous
Rudd	<i>Scardinius erythrophthalmus</i>	Introduced
White sucker	<i>Catostomus commersoni</i>	Indigenous
Yellow perch	<i>Perca flavescens</i>	Indigenous
<i>Source: USFWS 1994, TAMS 1991.</i>		

TAMS⁴ also used the IBI to analyze fish sampling data from Simon⁵ to assess habitat of the eastern Grand Calumet River. Five fish sampling events were conducted within the study area at Cline Avenue in the eastern Grand Calumet River between April 1987 and July 1988. The resulting fish assemblage yielded a relatively low IBI score and was categorized as being in the poor integrity class: dominated by omnivores, tolerant forms and habitat generalists; few top carnivores; growth rates and condition factors commonly depressed; hybrids and diseased fish often present. Of the 569 individuals caught during the sampling at the Cline Avenue station, 515 (90.5%) were introduced species, which are tolerant of highly variable conditions, further indicative of poor water quality conditions.

USFWS studied the distribution of Chinook salmon in the Grand Calumet River and Indiana Harbor Ship Canal in the fall of 1999⁶. Chinook salmon have been stocked annually in Lake Michigan by the Indiana Department of Natural Resources in recent years as a species management control for Alewives and for a sport fishery. The USFWS Chinook salmon survey revealed that once water temperatures in the Grand Calumet River and Indiana Harbor Ship Canal were consistently below

⁴ TAMS Consultants, Inc. 1991b. Illinois – Indiana Regional Airport, State of Illinois, State of Indiana, City of Chicago, Site Selection Report Appendix E, Volume II (Natural and Cultural Resources).

⁵ Simon, T.P., G.R. Bright, J. Rud and J. Stahl. *Water Quality Characterization of the Grand Calumet River Basin using the Index of Biotic Integrity*. U.S. Environmental Protection Agency, Region 5. 1998.

⁶ U.S. Fish and Wildlife Service. Technical Report. *A Study of the Distribution of Chinook Salmon (Oncorhynchus tshawytscha) in the Grand Calumet River and Indiana Harbor Canal, Lake County, Indiana*. August 2000.

19 °C, adult Chinook Salmon were found throughout the length of the EBGCR from mid-October until late November. Nearly 500 Chinook Salmon were caught during the survey, supporting the theory that a significant fall run of Chinook Salmon exists in the Grand Calumet River. Although the Grand Calumet River has not been designated as a salmonid stream⁷, USFWS found that water quality conditions during the salmon survey were within acceptable limits for salmonids, based on Indiana State Water Quality Standards.

Annually, the Indiana Department of Natural Resources, the Indiana Department of Environmental Management and the Indiana State Department of Health establish the Indiana Fish Advisory. Each year recent fish monitoring data is reviewed in order to develop the new statewide fish consumption advisory based on levels of PCBs and mercury found in fish tissue. Samples were taken of bottom, midwater and top-feeding fish in each area. Currently, for the Grand Calumet River/Indiana Harbor Canal, the fish consumption advisory is "No consumption (DO NOT EAT)", for all fish species, because of both PCB's and mercury⁸. This advisory has been in place for the east branch of the Grand Calumet River since 1986⁹.

Aquatic Invertebrates

USFWS invertebrate survey results were analyzed using the Ohio EPA's Invertebrate Community Index (ICI)¹⁰. ICI uses 10 metrics to evaluate the invertebrate species composition, abundance and diversity of taxa, water quality, and pollution tolerance of resident invertebrates. The resulting ICI scores showed the invertebrate communities of the EBGCR sites to be in the poor (one site) to very poor (four sites) integrity classification. All sites exhibited low numbers of individuals, low organism density, and low taxa diversity. The invertebrate communities were dominated by pollution-tolerant species, indicating considerable pollution stress in the EBGCR. Low numbers of predacious, shredding and filter collector feeding insects and the dominance of gathering collectors is indicative of an unbalanced trophic structure due to degraded water quality and poor physical habitat. The invertebrate trophic composition of the EBGCR has been adversely impaired by continuous loading of toxics to the river and sediments ¹¹.

⁷ Indiana Department of Natural Resources (IDNR) 1997. *Outstanding Rivers List for Indiana*. Internet Web Site. <<http://www.in.gov/nrc/policy/outstand.html>>

⁸ Indiana State Department of Health (ISDH) 2002. Internet Web Site. <http://www.state.in.us/isdh/dataandstats/fish/fish_adv_index.htm>

⁹ (Amy Hartsock, IDEM, pers. comm. 8/12/02)

¹⁰ Ohio Environmental Protection Agency. *Biological Criteria for the Protection of Aquatic Life: Volume III: Standardized Biological Field Sampling and laboratory Methods for Assessing Fish and Macroinvertebrates*. Division of Water Quality Monitoring and Assessment, Columbus, OH. 1989.

¹¹ U.S. Fish and Wildlife Service. U.S. Fish and Wildlife Service Biological Report. *Pre-Remedial Biological and Water Quality Assessment of the East Branch of the Grand Calumet River Gary, Indiana*, June 1994.

TAMS conducted benthic macroinvertebrate sampling at two stations in the east branch of the Grand Calumet River within the study area between July 1990 and May 1991¹². Three samples were taken at Industrial Highway and two were taken at Cline Avenue. Each sample was ranked by a Macroinvertebrate Biotic Index (MBI), as described by the Illinois EPA¹³. The MBI is based on pollution tolerance of each taxon collected, weighted by their abundance. MBIs for the five samples taken in the study area indicated considerable pollution stress.

5.9.4 Future Conditions – 2007

The following sections provide a description of vegetation and wildlife impacts that would be expected if either the No Action Alternative or the Proposed Alternative were selected.

5.9.4.1 No Action

Under the No Action alternative no construction would occur. Over the short term, the vegetational assemblages would remain the same and the utilization of these communities by wildlife would also remain unchanged. Over the long term, wetland vegetation communities would follow successional patterns toward more upland vegetational communities, such as sand prairies and savannas. Dune and swale, sand prairies and sand savannas would trend toward more forested communities. Areas of former industry that are abandoned would follow successional pathways toward urban vegetated and more forested vegetational communities. Continued maintenance of low, sparse ground cover in areas within the airport property under the Wildlife Hazard Management Plan would result in essentially unchanged vegetational communities and limited use of the airport property by wildlife.

Areas of dune and swale habitat around the airport would continue to support high species diversity of birds, amphibians and reptiles, while areas affected by industry or other development would provide habitat for species more tolerant of human disturbance. The use of the study area by mammals would continue to be low. Fish and invertebrate communities of the Grand Calumet River would remain unchanged. The wildlife communities of many of the natural areas currently remaining in the project area, including globally imperiled dune and swale habitat, would continue to be unprotected from disturbance and development.

¹² TAMS Consultants, Inc. 1991b. Illinois – Indiana Regional Airport, State of Illinois, State of Indiana, City of Chicago, Site Selection Report Appendix E, Volume II (Natural and Cultural Resources).

¹³ Illinois Environmental Protection Agency, 1989. *Biological Stream Characterization (BSC): A Biological Assessment of Illinois Stream Quality*. Special Report #13 of the Illinois State Water Plan task Force.

5.9.4.2 Improvements to Existing Runway 12-30 to Conform to Current FAA Standards

Major elements of this Proposed Alternative that would affect biotic communities include relocation of the EJ&E railroad tracks, relocation/development of the airside perimeter and southwest access roadways, burial of the overhead power lines along Cline Ave, extension of Runway 12 by 546 feet and improvement of the runway safety area, extension of Taxiway A by 546 feet, relocating Runway 12-30 navigational aids, and acquisition of land southeast of the airport.

Extension of Runway 12-30 and Taxiway A by 546 feet to the northwest would result in the filling, grading and/or paving of much of the central portion of the Asphalt Wetland, consisting of remnant dune and swale habitat. While the Asphalt Wetlands has been severely degraded by sand mining and the disposal of construction debris, oil refinery waste, and chemicals, much of it is composed of wetlands. Although Runway 12 and Taxiway A would only extend approximately 200 feet into the Asphalt Wetlands, improvements to the Runway 12 runway safety area (RSA) would require filling and grading of a 500-foot by 1,000-foot area at the end of Runway 12. The airside perimeter road would also be located on this fill, but would be routed around the runway and taxiway extensions and the RSA. Much of this part of the Asphalt Wetlands consists of wetlands and a semipermanent pond, and contains marsh, shrub-swamp, dune and swale, and panne/wet prairie vegetative communities. Many of these areas now contain significant cover of weedy and/or exotic vegetation, particularly in the more disturbed areas affected by sand mining and surface tar deposits, but native plant species and communities exist at this site. To accommodate improvements to Runway 12-30, nearly half of the remnant dune and swale habitat remaining in the Asphalt Wetlands would be permanently lost. A variety of vegetative types, including wetland plant communities, would also be lost. Because of the high degree of disturbance, wildlife diversity of the Asphalt Wetlands is likely low.

The relocation of Runway 12-30 navigational aids would not affect biotic communities beyond those impacts expected from runway and RSA construction. Most of these navigational aids are located adjacent to or in close proximity to the runway where vegetation is mowed. The Runway 30 localizer would be located 1,100 feet past the northwest end of the extended Runway 12, in an area that would already be filled and graded for the RSA and the relocated airside perimeter road.

The burial of power lines presently located on the east side of Cline Avenue would likely disturb only a small area of land with urban vegetated and unvegetated plant communities. These plant communities consist of aggressive, weedy and often exotic species with negligible habitat value.

The relocation of the Runway 12 threshold and the displacement of the Runway 30 threshold would not affect vegetational communities, as these changes involve modifications to areas immediately adjacent to the runways.

In order to bring the Runway 30 runway protection zone under control of the airport, approximately 20 acres of land southeast of the airport would have to be acquired. This area includes a business between the Indiana Toll road and the Grand Calumet River, and several blocks of a densely settled neighborhood consisting of 42 homes (5 north and 37 south of the Indiana Toll Road). This area also includes several acres of land adjacent to the Grand Calumet River and several more acres east of Industrial Highway. While the residences and business would be removed, there would be negligible losses of biotic communities because these areas are urban vegetated and unvegetated cover types with low habitat value. The other acquired areas would probably remain in their current vegetative state with no impacts to wildlife. *NWI maps show the area adjacent to the Grand Calumet River as semipermanently flooded marsh (see Exhibit 5-27).* Recent aerial photographs (November 2001) show the area east of Industrial Highway to contain a large graded area surrounded by forest.

Under Route 1D, the relocated EJ&E Railway track, from the south, would be routed through Wetland B and the southern portion of the Asphalt Wetland, north along Cline Avenue, then turn east parallel to the CSX Barr Subdivision tracks and cross through Clark Junction South, after which they eventually rejoin the original EJ&E tracks. Most of this route is alongside existing railroad tracks and roadsides, consisting primarily of urban vegetated communities generally characterized by aggressive and weedy, often non-native plant species. The exceptions are the crossings through Wetland B, the Asphalt Wetland and Clark Junction South where no road or railroad route currently exists.

Immediately after passing under the Indiana Toll Road/Cline Ave Interchange access ramp, the relocated EJ&E tracks would pass through the triangular Wetland B, comprised of common reed marshes and patches of successional forest, for about 700 feet. Approximately 5 feet of fill would be required along the route through this area in order to meet the elevation of the existing EJ&E tracks. This would result in a permanent loss of vegetation and habitat and the division of this area, which is already completely surrounded by railroad tracks and the Toll Road access ramp. The relocated route through the Asphalt Wetlands would require about 3 feet of fill to accommodate the EJ&E tracks. The eastern part of the Asphalt Wetlands crossing consists of disturbed woodland with native and exotic woody vegetation over remnants of dune and swale topography. The central and western parts of the crossing pass through a wetland area, which has been severely disturbed by a former oil refinery. This wetland area contains native wetland and upland vegetation, but also has areas with little or no vegetation due to petroleum and tar deposited on the soil surface. Although some native plant species exist, the vegetative communities that would be filled and eliminated by the EJ&E crossing of the Asphalt Wetlands are moderately to severely disturbed and appear to support a very limited diversity of wildlife.

With the exception of Clark Junction South, the relocated EJ&E route running alongside Cline Ave, across Chicago Ave and parallel to the CSX Barr Subdivision tracks passes through an environment of roadside and current and former industry with urban vegetated and unvegetated communities. As vegetation of these habitats is characterized by weedy, aggressive and often exotic species with low habitat value, biotic impacts would be negligible. The approximately 300-foot-long railroad crossing of Clark Junction South would require placing fill in this disturbed wetland. While this area is already disturbed and contains dense cover of exotic species, natural swale topography may exist at the site.

Under Route 1E, the relocated EJ&E Railway track, from the south, would follow the same route as Route 1D until reaching Cline Avenue. At Cline Avenue, the track would curve around the end of Runway 12-30 and turn to the southeast, parallel to the runway and through the Asphalt wetlands again before rejoining the original EJ&E tracks south of the Industrial Highway crossing. As previously mentioned, the Asphalt Wetlands are moderately to severely disturbed and appear to support a very limited diversity of wildlife and native vegetation. Some natural vegetative communities and wildlife habitat in the Asphalt Wetland would be permanently lost under this option.

5.9.4.3 Improvements to Provide Additional Runway Length on Runway 12-30

Major elements of this phase of the Proposed Alternative affecting biotic communities include the extension of Runway 12 and Taxiway A by 1,354 feet, relocation of Runway 12-30 navigational aids, the construction of two deicing/hold pads along Taxiway A, and creating two high speed exit taxiways between Runway 12-30 and Taxiway A.

Filling, grading and paving associated with extending Runway 12-30 and Taxiway A by 1,354 feet to the northwest would eliminate nearly all the remnant dune and swale habitat remaining in the Asphalt Wetlands. While the 1,354-foot runway and taxiway extensions would only reach halfway across the Asphalt Wetlands, the 500-foot by 1,000-foot RSA would extend to Cline Ave, completely bisecting the Asphalt Wetlands with fill. The airside perimeter and southwest access roads would also be located on this fill, but would be routed around the lengthened runway, taxiway and RSA. While the Asphalt Wetlands has been severely degraded by sand mining, construction debris disposal and industrial uses, the remnant dune and swale habitat remaining to the northwest of the initial 546-foot runway extension contains wetlands with marsh, shrub-swamp, dune and swale, and panne/wet prairie communities. Although many of the plant species are weedy and exotic, native vegetation does occur. The lengthening of Runway 12 would eliminate most of the wetlands and vegetational communities in the Asphalt Wetlands. Because of the high degree of disturbance, wildlife diversity of the Asphalt Wetlands is low.

The relocation of Runway 12-30 navigational aids would not affect biotic communities beyond those impacts expected from runway lengthening and construction of the RSA. Most of these navigational aids are located adjacent to or in close proximity to the runway where vegetation is mowed. The Runway 30 localizer would be located 1,100 feet past the northwest end of the extended Runway 12, in an area that would already be filled and graded for the RSA and the relocated airside perimeter road.

A deicing/hold pad would be constructed at each end of Taxiway A under this alternative. Because areas adjacent to Taxiway A are mowed fields, the creation of deicing/hold pads would have a negligible impact on vegetation or wildlife at the airport. Likewise, the creation of two high-speed exit taxiways between Runway 12-30 and Taxiway A where mowed turf currently exists would have a negligible effect on biotic communities.

5.9.4.4 Expansion of Existing Terminal

The proposed expansion of the existing terminal is not expected to impact biotic communities, as this terminal is in the center of the existing airport facility.

5.9.4.5 Acquisition and/or Reservation of Sites for Future Passenger Terminal and Air Cargo Facilities

Potential future aviation-related development is proposed in two areas in the Asphalt Wetland adjacent to the proposed runway improvements under the Improvements to Existing Runway 12-30 to Conform to Current FAA Standards and Improvements to Provide Additional Runway Length on Runway 12-30 alternatives. Reserving these sites is expected to impact the biotic communities of the Asphalt Wetlands as part of the cleanup of contaminated soil. The actual development of these areas would be defined as the need arises and will be subject to a separate environmental review at that time.

5.9.5 Summary of Findings

The biotic communities of areas where proposed impacts would occur under the project alternatives have been characterized through wetland delineations and biological surveys conducted for this and other projects, and supplemented by communications with environmental regulatory agencies and a literature review.

Extension of Runway 12-30 and Taxiway A by 546 feet to the northwest to conform to current FAA standards would result in the filling, grading and paving of much of the central portion of the degraded Asphalt Wetlands, which contain some remnant dune and swale habitat. While Runway 12 and Taxiway A would only extend approximately 200 feet into the Asphalt Wetlands, improvements to the Runway 12 runway safety area (RSA), including the airside perimeter road and southwest access

roads, would require filling and grading of a 500-foot by 1000-foot area at the end of Runway 12. To accommodate these improvements, nearly half of the remnant dune and swale habitat remaining in the Asphalt Wetlands would be permanently lost. A variety of vegetative and wildlife habitat types, including wetland plant communities, would also be lost.

The relocated EJ&E tracks under interim Route 1E and final Route 1D would follow the same route until reaching Cline Avenue. This route would pass through the triangular Wetland B, comprised of Common Reed marshes and patches of successional forest, for about 700 feet. Approximately 5 feet of fill would be required along the route through this area in order to meet the elevation of the existing EJ&E tracks. The relocated rail route through the Asphalt Wetlands, requiring about 3 feet of fill to accommodate the EJ&E tracks, would impact native and exotic woody vegetation over remnants of dune and swale topography, and a wetland that has been severely disturbed by a former oil refinery. Route 1E would curve around the end of Runway 12-30 and turn to the southeast, parallel to the runway and pass through the Asphalt wetlands again before rejoining the original EJ&E tracks. The final Route 1D would continue north along Cline Avenue, then turn east parallel to the CSX Barr Subdivision tracks and cross through Clark Junction South. The approximately 300-foot-long railroad crossing of Clark Junction South under Route 1D would require placing fill in this disturbed wetland. While this area is already disturbed and contains dense cover of exotic species, natural swale topography may exist at the site. These activities would result in a permanent loss of vegetation and associated wildlife habitat.

Filling, grading and paving in association with extending Runway 12-30 and Taxiway A an additional 1,354 feet to the northwest would eliminate nearly all the remnant dune and swale habitat remaining in the degraded Asphalt Wetlands. While the 1,354-foot runway and taxiway extensions would only reach halfway across the Asphalt Wetlands, the 500-foot by 1,000-foot RSA and airside perimeter road and southwest access roads would extend to Cline Ave, completely bisecting the Asphalt Wetlands with fill. This proposed project would eliminate most of the wetlands, vegetational communities, and associated habitat in the Asphalt Wetlands.

5.9.6 Mitigation

Impacts to the biotic communities in the study area from the proposed alternative would predominantly be to the vegetation and wildlife of wetlands. Proposed mitigation for these impacts is described in Section 5.11, Wetlands and Streams.